UTAH FLORA: MALVACEAE

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Abstract.— This paper is the third in a series dealing with a revision of the flora of Utah. Treated herein are 9 genera and 23 species, including both commonly cultivated, escaped, and indigenous representatives. Proposed new taxa include *Sphaeralcea grossulariifolia* (H. and A.) Rydb. var. *moorei* Welsh, *Sphaeralcea leptophylla* (Gray) Rydb. var. *janeae* Welsh, and *Sphaeralcea psoraloides* Welsh.

This third paper in the series leading to a revision of the flora of Utah deals with the small but significant and taxonomically difficult Mallow family. Especially complex are members of the genus *Sphaeralcea*, ably monographed by T. H. Kearney (1935), and reviewed for Utah by J. A. M. Jefferies (1972).

As with previous treatments, the work considers not only indigenous species and weeds or established escaped species, but those introduced species which are commonly grown as ornamentals or for other uses. Casually grown species, such as the okra, *Hibiscus esculentus* L., have been excluded. *Althaea*, *Hibiscus*, and *Malva* are included entirely on the basis of cultivated ornamentals and weeds which have become established in the state. *Malva neglecta* is a pest of cultivated areas. *Iliamna*, *Malvastrum*, *Sida*, *Sidalcea*, and *Sphaeralcea* are represented entirely by indigenous species. *Abutilon* has one species introduced and the other native. The number of specimens examined by me is indicated following the discussion of each species. The number in parenthesis is the number collected by me.

Malvaceae Juss.

Mallow Family

Herbs or, less commonly, shrubs, usually pubescent with branched or stellate hairs, annual, biennial, or perennial, with mucilaginous juice; leaves alternate, simple, mostly palmately veined, stipulate; flowers perfect (or imperfect), regular, solitary or in thyrsoid cymes, or more or less racemose or paniculate, sometimes with an involucel of sepal-like bractlets; sepals 5, more or less persistent; petals 5, separate, adnate to the staminal sheath; stamens numerous, united by the filaments (monadelphous); ovary superior, 3- to many-loculed; fruit a capsule or a schizocarp.

1.	Involucel lacking	2
—	Involucel of 1 or more bractlets, or if lacking (as in some *Sphaeralcea* specimens), then the flowers orange (grenadine)	3
2(1).	Petals white, pink, or lavender; plants of moist sites, usually at middle and higher elevations	*Sidalcea*
—	Petals yellow or pink to red; plants of cultivated lands or of arid sites, usually at lower elevations	*Abutilon*
3(1).	Petals orange or rarely purplish pink; indigenous perennial herbs of arid habitats at middle and lower elevations	*Sphaeralcea*
—	Petals variously colored, but not orange; indigenous or adventive perennial, biennial, or annual plants or various distribution	4
4(3).	Flowers rose pink or rarely white; plants indigenous, 7–15 dm tall, perennial, of middle and higher elevations	*Iliamna*

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– Flowers white, pink, rose, yellow, or other hues; plants differing in one or more ways from above 5

5(4). Flowers mostly 6–10 cm broad, opening flat; plants tall adventive or cultivated biennials ..... *Althaea*

– Flowers less than 6 cm broad or, if broader then the plants shrubby 6

6(5). Style branches 5, elongate; fruit a capsule; plants low annuals or shrubs ..... *Hibiscus*

– Style branches more than 5, short; fruit a schizocarp; plants annual or biennial 7

7(6). Style branches filiform, with elongate stigmatic lines; plants annual or biennial ..... *Malva*

– Style branches with capitate or truncate stigmas 8

8(7). Petals yellow, or orange to pink or red; plants annual with awned carpels or subshrubs with unawned carpels ..... *Abutilon*

– Petals yellowish white to lavender or whitish; carpels few to many, not awned; plants spreading annuals or herbaceous perennials 9

9(8). Petals yellow white; leaves reniform-orbicular, merely crenate-serrate ..... *Sida*

– Petals lavender or whitish; leaves palmately cleft, with rounded lobes ..... *Malvastrum*

ABUTILON Mill.

Plants herbaceous, annual or perennial, with stellate or simple hairs; leaves alternate, petioled, cordate at base, not or only obscurely lobed; flowers solitary and axillary or in leafy panicles; involucel lacking; calyx 5-cleft; corolla yellow to orange pink or red; fruit truncate-cylindric or subglobose, the carpels smooth sided, dehiscent nearly to the base; ovules 2 or more per carpel.

1. Plants perennial, with slender spreading or trailing branchlets; carpels 5, lacking awn-beaks; plants rare, known only from Washington County ..... *A. parvulum*

– Plants annual, with robust erect stems; carpels usually more than 10, each with a long divergent awn; plants uncommon, in agricultural regions ..... *A. theophrasti*

Abutilon parvulum **Gray.** Perennial, the stems slender and spreading or trailing, the caudex woody, grayish tomentose with minute stellate hairs, the branchlets pilose; leaves 0.5–5 cm long, ovate, cordate basally, dentate and sometimes obscurely 3-lobed; peduncles slender, axillary, 1-flowered, longer than the leaves; calyx lobes ovate-acuminate, reflexed in fruit; petals orange pink to red or sometimes yellowish, 4–6 mm long; carpels 5, somewhat tomentose, to 8 mm long. Known in Utah only from Veyo, Washington County (Meyer 4111), Colorado to California, and south to Texas and Mexico, 1(0).

Abutilon theophrasti **Medic.** Velvet leaf. Annual, the stems robust, erect, velvety and cinereous with short, soft hairs; leaves 3–10 cm long (from sinus to apex) and as broad or broader, orbicular-ovate, cordate at the base, abruptly acuminate at the apex, velvety pubescent; peduncles shorter than the leaves, one to few flowered; calyx lobes broadly ovate-acuminate; petals yellow, to about 6 mm long; carpels 10 or more, each with a long divergent awn. Adventive weedy species of disturbed or cultivated areas, occasional in Utah and Washington counties (to be expected elsewhere); widespread in North America; native to Europe; 3(0).

ALTHAEA L.

Plants herbaceous, biennial, with coarse stellate hairs; leaves alternate, petiolate,

cordate at the base, lobed; flowers solitary or in racemes; involucel of 6–9 bractlets, connate at the base; calyx 5-cleft; corolla of various colors; fruit flattened wheellike, invested by the calyx, the numerous carpels separating at maturity.

Althaea rosea **Cav.** Hollyhock. Coarse biennials to 20 dm tall or more, the stems erect, stellate-hairy; leaves (3-) 5- to 7-lobed, mostly 3–15 cm long (from sinus to apex) and often much broader; flowers shortly pedicellate, 6–12 cm wide or more, variously colored, often rose to pink or lavender, or sometimes white, usually with a dark center; calyx lobes triangular, investing the fruit at maturity, the involucel calyxlike; carpels numerous, stellate along the margins, and reticulate on the sides, 5–7 mm long. Cultivated ornamental, persisting and escaping, to be expected in all counties in Utah; widespread in North America; introduced from China; 15(0).

HIBISCUS L.

Plants herbaceous or woody, annual or perennial, with stellate or simple hairs; leaves alternate, petiolate, obtuse to truncate or cordate basally, lobed to incised; flowers axillary, solitary; involucel of 5–10 distinct bractlets; calyx 5-cleft, more or less accrescent in fruit; fruit a loculicidal capsule, the carpels 5; seeds several in each locule.

1. Plants annual; calyx strongly veined; petals cream colored, with a purple center ..... *H. trionum*
— Plants shrubs; calyx herbaceous, not distinctly veined; petals variously colored, but usually rose pink to lavender ..... *H. syriacus*

Hibiscus syriacus **L.** Althaea; Rose-of-Sharon. Shrubs, 20–40 dm tall or more, glabrous or softly stellate-hairy; leaves 2.5–8 cm long, 1.5–6 cm wide, triangular-ovate to rhombic, strongly 3-ribbed, commonly 3-lobed; flowers axillary, 4–7.5 cm wide; bractlets usually 5, linear, about as long as the calyx, glabrous to obscurely hairy; corolla variously colored and often double; fruit oblong-ovoid, to 25 mm long. Cultivated ornamental, rarely persisting; widely cultivated in North America; introduced from eastern Asia; 3(i).

Hibiscus trionum **L.** Flower-of-an-Hour. Annual, commonly 1.5–5 dm tall, the lower branches often prostrate, coarsely hispid-stellate to glabrate; leaves 3-lobed or more commonly 3- to 5-parted, the main lobes cuneate basally, the middle lobe the largest; flowers solitary, axillary, mostly 3–6 cm wide; bractlets usually 10, linear, often coarsely hispid, much shorter than the fruiting calyx; corolla cream colored to yellowish, with a purple center, closing in shade. Weedy species of cultivated land at lower elevations; widespread in North America; adventive from central Africa; 8(i).

ILIAMNA Greene

Plants herbaceous, perennial, sparingly and minutely stellate-hairy; leaves alternate, petiolate, cordate to truncate basally, the margin lobed; flowers in thyrsoid panicles; involucel of 3 narrow, persistent bractlets; calyx 5-cleft; fruit a loculicidal capsule, the carpels many; seeds usually 3 in each locule.

Wiggins, I. L. 1936. A resurrection and revision of the genus *Iliamna* Greene. Contr. Dudley Herb. 1: 213–229.

Iliamna rivularis **(Dougl.) Greene.** Wild Hollyhock. (*Malva rivularis* Dougl. ex. Hook.; *Sphaeralcea rivularis* (Dougl.) Torr. ex. Gray; *Phymosia rivularis* (Dougl.) Rydb.). Perennial, the stems few to many from a woody caudex, mostly 7–15 dm tall, minutely stellate-puberulent, green; leaves 3- to 7-lobed, cordate to truncate basally, 2.5–15 cm long (from petiole apex to tip), 2–16 cm broad, the lobes triangular, crenate-serrate, finely stellate; pedicels mostly less than 1 cm long; bractlets linear-lanceolate, shorter than the calyx; calyx lobes 3–5 mm long (to 8 mm

long in fruit); petals rose pink (rarely white), 20–37 mm long; carpels 6–10 mm long in fruit, hispid and stellate. Along streams, on foothills, in mountain brush, ponderosa pine, aspen, and spruce-fir communities, 1440–2900 m elevation, in Daggett, Davis, Duchesne, Iron, Juab, Piute, Salt Lake, Sanpete, Sevier, Summit, Tooele, Utah, Wasatch, and Weber counties; Colorado, Idaho, Nevada, and Washington; 40(vi).

MALVA L.

Plants herbaceous, annual, biennial or perennial, from taproots, the pubescence simple to branched or stellate; leaves alternate, petiolate, usually more or less cordate basally, commonly lobed; flowers in axillary clusters (sometimes solitary) or in subterminal panicles; involucel of 3 narrow to broad persistent bractlets; calyx 5-cleft; fruit a schizocarp, the carpels mostly 10–15.

1. Petals commonly 1.5–2 cm long; bractlets of involucel ovate to oblong . *M. sylvestris*
— Petals usually less than 1 cm long; bractlets of involucel linear to narrowly lanceolate 2

2(1). Stems prostrate spreading from the caudex; leaves obscurely lobed; plant a common weedy species ..... *M. neglecta*
— Stems erect; leaves definitely lobed; plant cultivated, rarely escaping ..... *M. verticillata*

Malva neglecta Wallr. Cheeses; Mallow. Annual or biennial, the stems prostrate-spreading, commonly 1–6 dm long, stellate-hairy; leaf blades reniform-orbicular, 0.6–3 cm long (from sinus to apex) or more, and much broader, crenate and not at all to only shallowly 5- to 7-lobed, the petioles to 20 cm long or more; flowers clustered (or solitary) in the axils; bractlets linear; calyx (3) 4–6 mm long at anthesis, the lobes acuminate; petals white to pink or lilac, about twice as long as the sepals; carpels hairy, rounded on the back. Weeds of disturbed sites and cultivated land, in much of Utah (specimens known from Cache, Iron, Kane, Salt Lake, San Juan, Summit, Utah, and Washington counties); widespread in North America; adventive from Eurasia; 22(ii). Note: Two other species, *M. parviflora* L. and *M. rotundifolia* L., might be present in Utah. They are similar to *M. neglecta* but have petals subequal to the sepals. *Malva parviflora* has glabrous petal claws, whereas in *M. rotundifolia* the claws are bearded.

Malva sylvestris L. High Mallow. Biennial, the stems ascending, mostly 3–10 dm tall, rough hairy to glabrate; leaf blades 3–8 cm long or more and often broader, orbicular to cordate or reniform, crenate and with 5–7 lobes, the petioles to 10 cm long or more; flowers clustered in the leaf axils; bractlets ovate to elliptic; calyx 5–7 mm long at anthesis, the lobes short and broad; petals 15–20 mm long, rose purple; carpels glabrous or nearly so, sharp edged. Cultivated ornamental, rarely escaping (Utah Co., Larsen 7152 BRY); widespread in North America; adventive from Europe; 1(0).

Malva verticillata L. Curled Mallow. Annual, the stems erect, mostly to 10 dm tall or more, sparingly stellate-hairy; leaf blades mostly 1.5–7 cm long and as broad or broader, orbicular to reniform, undulate-crisped and distinctly 5- to 7-lobed, long-petioled; flowers solitary or clustered, subsessile or some pediceled; bractlets linear to narrowly lanceolate; calyx 3.5–5 mm long, the lobes acuminate; petals white, only somewhat surpassing the sepals; carpels glabrous, the edges rounded. Cultivated ornamental, rarely escaping (Washington Co., Galway in 1934 BRY); widely scattered in the United States; adventive from the Old World; 1(0). Our material belongs to var. **crispa** L.

MALVASTRUM Gray

Plants herbaceous, annual, stellate-hairy; leaves alternate, petiolate, the blades subcordate to truncate basally, palmately lobed; flowers solitary in the axils or in terminal bracted clusters; involucel of usually 3 slen-

der bractlets; calyx 5-cleft, the lobes long-acuminate; carpels 10–15; fruit a schizocarp.

***Malvastrum exile* Gray.** (*Malveopsis exile* (Gray Kuntze; *Eremalche exile* (Gray) Greene; *Sphaeralcea exile* (Gray) Jepson). Annual, the stems spreading-decumbent to prostrate, branching from near the base, 0.3–4 dm long, rather sparingly stellate-hairy; leaf blades suborbicular, 0.8–3.2 cm wide, palmately 3- to 5-cleft, with rounded or cuspidate teeth; petioles 1–5 cm long; bractlets narrowly lanceolate to sublinear; calyx 3–5 mm long; petals whitish to pinkish or lavender, only somewhat surpassing the sepals; carpels transversely wrinkled. Open sites in blackbrush and creosote brush communities, 850–1200 m elevation, in Garfield (report probably erroneous) and Washington counties; Arizona and southern California; 6(0).

Sida L.

Plants herbaceous, perennial, from spreading rhizomes, densely stellate-canescent; leaves alternate, petiolate, crenate-serrate, not or obscurely linear, deciduous bractlets; calyx 5-lobed; carpels 5–10, 1-seeded; fruit a schizocarp.

***Sida hederacea* (Dougl.) Torr.** Alkali-Mallow. (*Malva hederacea* Dougl.; *M. californica* Presl.; *Disella hederacea* (Dougl.) Greene). Perennial, the stems from elongate rhizomes, decumbent to prostrate, the surface obscured by overlapping stellate hairs, 1–4 dm long; leaf blades reniform to orbicular, often oblique, dentate, obscurely if at all lobed, the petioles 0.3–2.5 (3) cm long; bractlets sublinear; calyx 5–7 mm long; petals yellowish (fading orange), 10–12 mm long; carpels reticulate on the sides. Saline meadows and seeps, at lower elevations in Emery, Salt Lake, Tooele, Uintah, and Utah counties (and probably elsewhere); Washington south to California, Texas, and Mexico; 6(i).

Sidalcea Gray

Plants herbaceous, perennial, from taproots or short rhizomes, usually stellate and somewhat hirsute; leaves alternate, petiolate, often dimorphic, the lowermost merely palmately lobed, the upper ones commonly cleft and with linear lobes; flowers borne in semi-spicate racemes, of two types, those of plants with perfect flowers the largest; involucel lacking; calyx 5-cleft; carpels 5–10, 1-seeded, tardily separating.

Hitchcock, C. L. 1957. A study of the perennial species of *Sidalcea*. Univ. Wash. Publ. Biol. 18: 1–79.

Roush, E. M. F. 1931. A monograph of the genus *Sidalcea*. Ann. Mo. Bot. Gard. 18: 117–244.

1. Petals white or merely pinkish-tinged, often drying yellow; anthers bluish pink; plants rhizomatous; stems hirsute below ..... *S. candida*
— Petals pink to lavender; anthers usually yellow to white; plants rhizomatous or not; stems hirsute to glabrous or tomentose below 2

2(1). Plants from rather fleshy taproots; stems commonly hirsute below; calyx hirsute with pustulose hairs (at least in part) ..... *S. neomexicana*
— Plants often rhizomatous; stems stellate to glabrous below; calyx seldom with pustulose hairs ..... *S. oregana*

***Sidalcea candida* Gray.** Plants from slender rhizomes, the stems 4–10 dm tall, glabrous to hirsute with simple hairs below, more or less stellate above; leaf blades 6–20 cm wide, the basal ones shallowly 5- to 7-lobed and coarsely crenate, the upper ones divided into 3–5 entire segments; calyx 7–10 mm long, variously stellate-hairy and glandular puberulent; petals white to pinkish, often drying yellow, 12–20 mm long; carpels about 3 mm long. Stream banks, lake shores, and seeps, 1410–2750 m, in Beaver, Garfield, Grand, Iron, Millard, Piute, Salt Lake, San Juan, Sevier, Summit, Uintah, Utah, and Wasatch counties; Wyoming and Colorado west to Nevada and south to New Mexico. Our materials have been treated as belonging to two more or less and at least partially sympatric varieties; 25(vi).

1. Calyx rather uniformly hairy from base to apex of the lobes; plants of wide distribution ..... *S. candida* var. *candida*
– Calyx more hairy at the base than on the lobes, the lobes often subglabrous; plants mostly from mountainous portions of middle Utah ..... *S. candida* var. *glabrata*

Var. *candida*. (*S. candida* var. *tincta* Cockerell). Known from Beaver, Grand, Iron, Salt Lake, San Juan, Summit, and Wasatch counties; Colorado, New Mexico.

Var. *glabrata* C. L. Hitchc. Known from Iron, Millard, Piute, Salt Lake, Sevier, Summit, and Uintah counties; Wyoming, Colorado, and Nevada.

Sidalcea neomexicana Gray. Plants from enlarged taproots or fascicled roots, the stems 2–9 (10) dm tall, hirsute below (or rarely glabrous) with simple or bifurcate hairs; leaf blades 1.5–11 cm wide, the basal ones crenate to shallowly 5- to 7-lobed, the cauline ones divided usually into 5 laciniate to entire segments; calyx 5–10 mm long, usually with some simple pustulose hairs interspersed with stellate ones; petals rose pink (fading blue-purple), 11–19 mm long; carpels 2–3 mm long. Wet Meadows, stream banks, and seeps, at 1370 to 2150 m in Box Elder, Garfield, Juab, Piute, Salt Lake, Sanpete, Sevier, Summit, Utah, and Wasatch counties; Oregon, Idaho, and Wyoming south to California, Arizona, and Mexico.

1. Hairs of lower stem nearly all simple; calyx coarsely and rather densely hirsute to coarsely hairy, lacking appressed stellate hairs; upper stems usually glabrous ..... *S. neomexicana* var. *neomexicana*
– Hairs of lower stem often forked; calyx often with fine appressed stellate hairs in addition to the coarse ones; upper stems often stellate hairy ..... *S. neomexicana* var. *crenulata*

Var. *crenulata* (A. Nels.) C. L. Hitchc. (*S. crenulata* A. Nels., type from Juab, Utah; *S. neomexicana* ssp. *crenulata* (A. Nels.) C. L. Hitchc.). Known from Box Elder, Juab, Salt Lake, Sanpete, Sevier, Summit, Utah, and Wasatch counties; Oregon, Idaho, and Nevada; 10(ii).

Var. *neomexicana*. Known from Box Elder, Garfield, Piute, San Juan, Sevier, Utah, and Wasatch counties; Wyoming, Colorado, Arizona, and Mew Mexico; Mexico; 12(ii).

Sidalcea oregana (Nutt.) Gray. (*Sida oregana* Nutt. ex T. & G.; *S. nervata* A. Nels.). Plants from a taproot, lacking or rarely with rhizomes, the stems 3–11 dm tall or more, glabrous or usually appressed-stellate hairy below, appressed-stellate above; leaf blades 2.5–17 cm wide, the basal ones shallowly 5-to 7-lobed and coarsely crenate, the cauline ones deeply lobed, with 3–7 coarsely toothed to entire lobes; calyx 3.5–9 mm long, variously stellate-hairy and sometimes bristly; petals 7–23 mm long, pale pink to rose pink (fading blue purple); carpels 2.5–3 mm long. Meadows, stream banks, and open woods, at 1680 to 2750 m in Cache, Juab, Salt Lake, Sanpete, Summit, Utah, Wasatch, and Weber counties; Washington and Idaho south to California, Nevada, and Utah. Our materials belong to var. **oregana**; 32 (ii).

SPHAERALCEA St. Hil.

Plants herbaceous, perennial, from taproots or rhizomes, glabrescent to canescent with stellate hairs; leaves alternate, petiolate, sometimes dimorphic, the lowermost merely toothed or palmately lobed (rarely entire), the upper ones cleft to entire; flowers borne in racemose to thyrsoid cymes; involucel of 3 or fewer filiform bractlets; calyx 5-cleft; carpels 8–20, the seeds 1 or 2 per carpel; fruit a schizocarp, the mature fruit segments divided into a basal indehiscent, reticulate portion and an apical dehiscent portion.

Jefferies, J. A. M. 1972. A revision of the genus *Sphaeralcea* (Malvaceae) for the state of Utah. Unpublished thesis. Brigham Young University. 92 pp.

Kearney, T. H. 1935. North American species of *Sphaeralcea*, Subgenus Eusphaeralcea. Univ. Calif. Publ. Bot. 19(1): 1–102.

1. Inflorescence racemose, rarely with more than one flower per node or, if more, as in *S. caespitosa*, then the plants restricted to Millard County 2
– Inflorescence thyrsoid to thyrsoid-glomerate, with usually more than one flower per node; distribution various 5

2(1). Leaf blades only slightly, if at all, 3- to 5-lobed, the margins irregularly crenate-dentate; hairs with rays radiating in more than a single plane; plants seldom more than 1.5 dm tall, known only from western Beaver and Millard counties ..... *S. caespitosa*
– Leaf blades distinctly 3- to 5-lobed, -parted, or -divided; hairs of rays radiating in a single plane (except in *S. coccinea*); plants often 1.5 dm tall or more, of different distribution 3

3(2). Leaves trifoliolate, the leaflets linear to narrowly oblanceolate and entire, or the upper ones simple and entire; plants of southeastern Utah ..... *S. leptophylla*
– Leaves various, but if trifoliolate then the leaflets oblanceolate and entire to toothed, if the uppermost simple then toothed or lobed; distribution various 4

4(3). Lowermost leaves simple and entire or trifoliolate, or some broadly toothed or lobed; involucel present; rays of hairs radiating in one plane; plants of eastern Wayne County ..... *S. psoraloides*
– Lowermost leaves usually 3- to 5-lobed, the lobes usually toothed or again lobed; involucel present or lacking (caducous); rays of hairs radiating in several planes; plants of broad distribution ..... *S. coccinea*

5(1). Plants only sparingly pubescent, the herbage bright green 6
– Plants moderately to densely pubescent, the herbage yellowish, whitish, or grayish 8

6(4). Leaves 3- to 5-parted or -divided, the lobes with narrow, regularly pinnatifid margins, the teeth at nearly right angles to the vein; carpels often with transparent lacunae, 4–6 mm high; plants rare, of southern Utah only ..... *S. rusbyi*
– Leaves variously lobed, divided, or parted, the lobes with broader margins irregularly toothed or lobed, but not as above; carpels with opaque lacunae, 3–4.5 mm high 7

7(6). Leaves slightly lobed, the margins unevenly toothed or, in some, deeply parted to divided with the margin coarsely and irregularly lobed, the base subcordate to cuneate; plants of northern Utah ..... *S. munroana*
– Leaves 3- to 5-parted or -divided, the margins regularly cleft, lobed, or toothed, the base subcordate to deeply cordate; plants mostly of southern Utah ..... *S. grossulariifolia*

8(5). Inflorescence loosely thyrsoid (appearing paniculate), leafy; flowers not numerous at each node; peduncles generally elongate; calyx surpassing the fruit; carpels with reticulae extending onto back of carpel; plants of southwestern Utah ..... *S. ambigua*
– Inflorescence contracted thyrsoid-glomerate; flowers often numerous at each node, not especially leafy; calyx often shorter than the fruit; carpels with reticulae confined to lateral face of carpel; plants of various distribution 9

9(8). Leaves 3- to 5-cleft, -parted, or -divided; carpels with well-defined reticulae on less than half of carpel face; plants of all but the northeastern one-fourth of Utah ..... S. *grossulariifolia*

— Leaves shallowly 3- to 5-lobed; carpels with well-defined to nearly obscure reticulae on the lower one-third of the carpel; plants mainly of eastern and southern Utah, scattered elsewhere ..... S. *parvifolia*

Sphaeralcea ambigua **Gray.** Stems arising from a woody caudex, several to numerous, 3–10 dm tall, whitish to yellowish canescent; leaf blades 1–6 cm long (from sinus to apex), 0.8–5 cm wide, thickish, usually rugose, with veins prominent beneath, ovoid, deltoid, or nearly orbicular, the base cordate to deeply cordate, obscurely to definitely 3- to 5-lobed, the lobes crenate; inflorescence an open panicle, sometimes narrowly thyrsoid; pedicels usually shorter than the calyx; calyx uniformly pubescent to glabrate, 6–20 mm long at anthesis, the lobes lanceolate to acuminate; petals 15–22 mm long, orange to orange pink (fading pinkish); carpels 12–16 mm high, the indehiscent portion comprising about one-third of the carpel, prominently reticulate. Creosote bush-blackbrush and mixed warm desert shrub communities, 670–1070 m, in Washington Co.; Nevada, Arizona, and California; and Mexico. Our material belongs to var. *ambigua*; 10(i).

Sphaeralcea caespitosa **M. E. Jones.** Jones Globemallow. Stems solitary or more commonly few to several from the summit of a branching woody caudex, 0.2–2.5 dm tall, whitish to grayish canescent; leaf blades 1.2–5.5 cm long, 1.2–6 cm wide, thickish, not rugose, veins apparent but not especially prominent, ovate to deltoid or orbicular, the base truncate to obtuse, obscurely if at all lobed, crenate to crenate-dentate; inflorescence thyrsoid, the flowers tightly clustered or solitary; pedicels shorter than the calyx; calyx uniformly stellate, the rays of hairs not radiating in a single plane, the lobes lance-acuminate; petals 15–21 mm long, orange; carpels 12–14, 4–6 mm high, the indehiscent portion forming slightly more than one-third of the carpel, reticulate on the sides. Mixed desert shrub communities (shadscale, rabbitbrush, winterfat), mainly on Sevy Dolomite formation, at 1370–1750 m, in Millard and Beaver counties; endemic; 20(iii).

Sphaeralcea coccinea **(Nutt.) Rydb.** Common Globemallow. (*Malva coccinea* Nutt.; *Cristaria coccinea* (Nutt.) Pursh; *Sida coccinea* (Nutt.) DC.; *Malvastrum coccineum* (Nutt.) Gray.; *Sida dissecta* Nutt.; *M. c.* var. *dissectum* (Nutt.) Gray; *M. dissectum* (Nutt.) Cockerell; *S. dissecta* (Nutt.) Rydb.; *S. coccinea* ssp. *dissecta* (Nutt.) Kearney; *S. coccinea* var. *dissecta* (Nutt.) Kearney; *M. c.* var. *elatum* Baker; *M. elatum* (Baker) A. Nels.; *S. elata* (Baker) Rydb.; *S. c.* ssp. *elata* (Baker) Kearney; *S. c.* var. *elata* (Baker) Kearney; *M. cockerellii* A. Nels.; *M. micranthum* W. & S.). Stems solitary or few to many from the apex to a woody caudex, or less commonly from creeping rhizomes, 0.6–4.2 dm tall, white to yellowish canescent; leaf blades 1.1–3.7 cm long, 1.2–5.2 cm wide, usually wider than long, ovate to cordate-ovate in outline, the base often cordate, usually 3-to 5-lobed, with main divisions cleft almost or quite to the base, the lobes usually again toothed or lobed; inflorescence racemose, sometimes paniculate, rarely thyrsoid; pedicels shorter than the calyx; calyx uniformly stellate, the rays or hairs not radiating in a single plane, the lobes lance-acuminate; petals 8–15 mm long, orange; carpels 8–14, 2–3 mm high, the indehiscent part forming two-thirds or more of the carpel, reticulate on the sides and on the back. Blackbrush, shadscale-greasewood, sagebrush, juniper-pinyon, mountain brush, and ponderosa pine communities, 920–2750 m, in all counties (except Morgan and Wasatch?); Saskatchewan and Alberta south to Arizona, New Mexico, and Texas. Our materials have been recognized as belonging to vars. *dissecta* and *elata*, but the segregation of these entities appears to have been wholly arbitrary, with intermediates more numerous than the supposed taxa; 152(xviii).

Sphaeralcea grossulariifolia **(H. & A.) Rydb.** Gooseberry-Leaved Globemallow. (*Sida grossulariifolia* H. & A.; *Malvastrum*

grossulariifolium (H. & A.) Gray; *S. pedata* Torr., in Gray; *S. g.* ssp. *pedata* (Torr.) Kearney; *S. g.* var. *pedata* (Torr.) Kearney). Stems few to many from a woody caudex, 1–10 dm tall or more, whitish to yellowish canescent to subglabrous and green; leaf blades 1.3–5 cm long, 1.3–5 cm wide, usually longer than wide, ovate to cordate-ovate in outline, the base cordate to truncate or obtuse, usually 3- to 5-lobed, the main division usually cleft or parted to irregularly toothed; inflorescence thyrsoid, with usually more than one flower per node; pedicels shorter than to much longer than the calyx; calyx uniformly stellate, the rays of hairs not radiating in a single plane, the lobes ovate to lance-acuminate; petals 8–20 mm long, orange or rarely rose pink; carpels 10–14, 2.5–4.5 mm high, the indehiscent portion forming from two-fifths to three-fifths of the carpel, reticulate on the sides. Blackbrush, shadscale, rabbitbrush, sagebrush, juniper-pinyon, and less commonly mountain brush communities, 920–2450 m, in Beaver, Box Elder, Cache, Emery, Garfield, Grand, Iron, Kane, Juab, Millard, Morgan, Piute, Salt Lake, San Juan, Sanpete, Sevier, Tooele, Utah, Wasatch, Washington, and Wayne counties; Washington, Oregon, Nevada, California, and Arizona. Two infraspecific taxa have been segregated, largely on the basis of form of the leaf blades. Intergradation of the phases seems to be complete. Further, *S. grossulariifolia* appears to form intermediates with *S. coccinea*, *S. parvifolia*, and the more northern *S. munroana*. A phase with green herbage and thin leaves occurs along Glen Canyon. It seems to represent a taxonomic unit worthy of recognition.

1. Herbage bright green; leaves thin-textured; plants of eastern Kane and Garfield, and western San Juan counties ..... *S. grossulariifolia* var. *moorei*
— Herbage gray green to whitish canescent; leaves thick-textured; plants widespread ..... *S. grossulariifolia* var. *grossulariifolia*

Var. *grossulariifolia*. This is the common and widely distributed phase of the species in Utah. The report by Kearney (l.c., p. 90) of *S. digitata* (Greene) Rydb. apparently belongs here; 115(xii).

Var. *moorei* Welsh var. nov. Plantae similis var. *grossulariifoliae* sed differt in folii et caules virides et folii tenues. Holotype: Kane County, Utah, east side of Last Chance Bay, Lake Powell, Entrada Sandstone, S. L. Welsh and N. D. Atwood 11597, 2 May 1972 (BRY). Additional specimens: Kane County, mouth of Escalante River, Lake Powell, S. L. Welsh and G. Moore 11810, 5 June 1972; do, Willow Tank, D. A. White 111, 4 May 1962; do, Escalante Canyon, S. L. Welsh and G. Moore 11827, 5 June 1972; do, N. D. Atwood and R. Allen 3211, 24 August 1971; do, Hole-in-the-Rock, B. F. Harrison 12112, 14 May 1953; San Juan Co., 1 mi. E of Hole-in-the-Rock, S. L. Welsh and C. A. Toft 11869, 16 June 1972; do, Three Garden, Lake Powell, ca 1 mi. N of confluence with San Juan Arm, S. L. Welsh 12420, 5 May 1974; do, Comb Wash, S. L. Welsh and N. D. Atwood 9972, 6 June 1970 (all at BRY). This variety is named to honor Glen Moore, botanist, teacher, collaborator, and collector.

***Sphaeralcea leptophylla* (Gray) Rydb.** (*Malvastrum leptophyllum* Gray). Stems few to many from a woody caudes, 2.0–5.5 dm tall, grayish canescent to yellow green throughout; leaf blades 1.0–3.2 cm long, digitately 3-lobed, the lobes entire, linear to oblanceolate, 1–4 mm wide, or the upper leaves simple and linear; inflorescence racemose, elongate, usually with one flower per node; pedicels from much shorter to longer than the calyx; calyx uniformly stellate, the rays of hairs radiating in a single plane, the lobes lance-attenuate; petals 8–12 mm long, orange; carpels 7–9, 3–3.5 mm high, the indehiscent portion forming two-thirds–three-fourths of the carpel, coarsely reticulate, ridged, or tuberculate on the back. Blackbrush and mixed semidesert shrub communities, 1200–1520 m, in Garfield, Grand, and San Juan counties; New Mexico, Arizona, Texas, and Mexico. Two distinctive phases are recognizable among our materials; they can be distinguished as follows:

1. Plants grayish canescent, the hairs obscuring the surface of stems, leaves, and calyx lobes; leaf lobes narrowly oblong to linear; distribution as for the species ..... *S. leptophylla* var. *leptophylla*

— Plants green to yellow green, the hairs widely separated, not obscuring stems, leaves, or calyx lobes; leaf lobes, at least of lowermost leaves, oblanceolate to spatulate; known only from San Juan County, Utah ..... *S. leptophylla* var. *janeae*

Var. *leptophylla*. This is the common form of the species. It is known from Garfield, Grand, and San Juan counties, Utah, and from New Mexico and Arizona; 7(iii).

Var. *janeae* **Welsh var. nov.** Plantae similis var. *leptophylla* sed differt in folii caules et calyces virides et lobos foliorum inferiorum oblanceolatos vel spathulatos. Holotype: San Juan County, Utah, along White Rim road, north of Turks Head, on sandy slopes in blackbrush community, Canyonlands National Park, S. L. Welsh 7064, 17 May 1968 (BRY). This variety is named to honor Jane Ardis Murray Jefferies, student of Sphaeralcea in Utah.

Sphaeralcea munroana **(Dougl.) Spach in Gray.** Munroe Globemallow. (*Malva munroana* Dougl. in Lindl.; *Nuttallia munroana* (Dougl.) Nutt.; *Malvastrum munroanum* (Dougl.) Gray; *S. subrhomboidea* Rydb.; *S. m.* ssp. *subrhomboidea* (Rydb.) Kearney; *S. m.* var. *s.* (Rydb.) Kearney). Stems several to many from a branching woody caudex, 1.8–7 dm tall or more, yellowish green to somewhat grayish canescent, the foliage usually bright green; leaf blades 1–6 cm long, 0.8–6 cm wide, ovate to orbicular or rhombic in outline, the base truncate to obtuse or subcuneate, usually 3- to 5-lobed, the sinuses shallow to very deep, the main divisions merely toothed or the lateral ones incised; inflorescence narrowly thyrsoid, usually with more than one flower per node; pedicels usually much shorter than the calyx; calyx uniformly stellate, the rays of hairs not radiating in a single plane, the lobes deltoid-ovate to ovate; petals 8–15 mm long, orange; carpels 10–13, 2.5–3 mm high, the indehiscent portion forming about half the carpel, reticulate on the sides. Mixed desert shrub, or more commonly, in sagebrush and mountain brush communities, 1370–2450 m, in Box Elder, Cache, Duchesne, Emery, Summit, Tooele, Uintah, Utah, and Wasatch counties; Montana, Idaho, Washington, Wyoming, Nevada, and California. This entity is much like both *S. parvifolia* and *S. grossulariifolia*. The green color of herbage is diagnostic of *S. munroana* from both, except for the var. *moorei* which is not sympatric with *S. munroana*; 21(ii).

Sphaeralcea parvifolia **A. Nels.** Nelson Globemallow. (*S. marginata* York, ex Rydb.; *S. arizonica* Heller, ex Rydb.). Stems few to many from a branching woody caudex, 1.5–10 (11) dm tall, grayish canescent, the foliage gray green or only somewhat yellow green; leaf blades 1.0–5.5 cm long, 1.2–5.2 cm wide, ovate to orbicular, reniform, or cordate-ovate, the base cordate to truncate or obtuse, usually shallowly 3- to 5-lobed, the sinuses usually shallow, the lobes crenate-dentate; inflorescence commonly narrowly thyrsoid, usually with more than one flower per node; pedicels usually shorter than the calyx; calyx uniformly stellate, the rays of hairs not radiating in a single plane, the lobes lanceovate to deltoid; petals 7–15 mm long, orange; carpels 10–12, 3–4 mm high, the indehiscent part forming from one-fourth to one-third of the carpel, faintly reticulate on the sides. Blackbrush, salt desert shrub, sagebrush, pinyon-juniper, and mountain brush communities, at 850 to 2700 m, in Box Elder, Cache and Tooele counties, where probably of recent introduction, and in Duchesne, Emery, Garfield, Grand, Iron, Kane, Piute, San Juan, Sevier, Tooele, Washington, and Wayne counties, where likely indigenous; Nevada, Arizona, New Mexico, and California. *Sphaeralcea parvifolia* has been compared by Kearney (l.c.) with *S. ambigua*, which it resembles. The relationship of *S. parvifolia* in Utah seems to lie with the largely sympatric *S. grossulariifolia*; 144(xxii).

Sphaeralcea psoraloides **Welsh sp. nov.** Stems few to many from a branching caudex, 1.4–2.4 dm tall or more, sparsely yellowish canescent, the foliage yellow green; leaf blades 1.3–3.5 cm long, 0.4–3.8 cm wide, oblanceolate to cuneate-ovate in outline, cu-

neate to obtuse or rounded basally, trifoliolate or simple to 3-lobed below, deeply 3- to 5-cleft above, the lobes entire to few toothed or lobed, usually more than 5 mm wide; inflorescence racemose, the flowers solitary in the upper axils; calyx uniformly stellate, the rays of hairs radiating in a single plane, the lobes lance-acuminate; petals 10 (8–12) mm long, orange; carpels 10 (fruit unknown). *Ephedra-Grayia* community on Entrada siltstone, 1500 m, in Wayne County; endemic.

Plantae similis S. *leptophylla* sed differt in foliolos oblanceolata vel laminas superiores confluentes et lobatos; e S. *coccinea* laminis inferioribus simplicibus vel trifoliolati digitatis distinguenda.

Caules pauci vel multi e caudicibus ramificantibus 1.4–2.4 dm alti vel plures flavidi-canescentes parce folia et caules luteo-virides; laminae foliorum 1.3–3.5 cm longae 0.4–3.8 cm latae oblanceolata ad cuneati-ovatas cuneatae ad obtusas vel rotundatas basaliter trifoliolatae vel simplicia ad trilobata infra 3–5 fissa profunde supra lobis intergris ad paucidentatis vel pauci-lobatis plerumque plus quam 5 mm latis; inflorescentiae racemosae, flores solitari in axilas supras; calyces stellati uniformiter, radius pilos radiantibus in planitem singularem, lobus calycis lanci-acuminatis; petala 10 (8–12) mm longa, aurantiaca; carpeli 10 (fructus ignotus). Holotype: Wayne County, Utah, Salt Wash, ca 17 mi. due WNW of Hanksville, T27S, R8E, Sec. 24, at 1500 m, on Entrada siltstone, *Grayia-Ephedra* community, S. L. Welsh 13348, 1 June 1976 (BRY). Paratype: do, S. L. Welsh 13345, 1 June 1976 (BRY).

Sphaeralcea rusbyi **Gray.** Stems few to many from a caudex, or rarely subrhizomatous, mostly 2–6.5 (8.5) dm tall, yellowish green to somewhat grayish canescent; leaf blades 1.3–3 cm long, 1.2–4 cm wide, ovate to orbicular in outline, the base truncate-obtuse to prominently cordate, parted to divided or merely cleft, the lobes again toothed (the teeth spreading at nearly right angles); inflorescence thrysoid to paniculate, with more than one flower per node; pedicels usually shorter (to much longer) than the calyx; bractlets often dark red; calyx uniformly stellate (more densely so than on the herbage), the rays of hairs not radiating in a single plane, the lobes ovate to lance-ovate; petals 9–18 mm long, orange; carpels 10–12, 4–6 mm high, the indehiscent part forming from one-fourth to two-fifths of the carpel, finely reticulate on the sides. Blackbrush, creosote brush, and mixed warm desert shrub communities, 820–1070 m, in Washington County; Arizona. S. *rusbyi* forms apparent intermediates with phases of S. *grossulariifolia* and S. *parvifolia*; 4(0).